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had been driven with numerous other fishes by a storm, on July 8, 1919.

Prickles absent; dorsal rays, VIII, 17; anal rays, 14; pectoral rays, 16; depth, about 6.8; head, 3.6; eye, 4.7; upper jaw, 3.3; length of preopercular spine from angle of ridge into eye, 1.2; length to caudal base, 89 mm.

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OBSERVATIONS ON THE HIBERNATION OF THE BOX TURTLE

On December 2, 1917, while setting a line of mouse traps on the property of the Washington Biologists' Field Club at Plummers Island, Maryland, my attention was attracted by a small opening in the ground partly covered by fallen leaves. On lifting aside the rubbish to afford a better view I found that this hole formed the entrance of a small cavity in which a box turtle (*Terrapene carolina carolina* [Linn.]) had begun hibernation for the winter. The opening had been made within a few days, as the earth about it was still loose and crumbling. Apparently the turtle had worked its way into the humus until its shell was covered and then had turned so that its side was presented to the opening. The sides of the entrance hole were somewhat broken, but the opening was still about three inches broad and two inches high. Above the turtle was covered by two and one-half inches of earth, while one hind-foot and the posterior half of the left side were exposed at the entrance within two inches of the surface. The rest of the animal was covered closely by the loose earth surrounding it. The site chosen for hibernation was near the border of an open deciduous woods, on a gently inclined southern slope.

The location was marked and observations were made upon this turtle at intervals during the follow-

ing winter and spring, care being taken to avoid undue disturbance. The animal did not change its position and the opening into the cavity was not filled with earth. Drifting leaves covered the spot and later these were packed firmly by the fall and melting of snow. The winter proved to be exceptional for the vicinity of Washington for its severity and for the unusual snowfall. February 1 snow lay in these woods to the depth of sixteen inches.

On March 3, 1918, with the melting of the snow, I found that the earth had sunk away around the turtle until one-third of the shell was uncovered. The animal, however, had not changed position. On March 24 it had left the slight excavation in which it had spent the winter, but had moved only a few inches to one side, where it lay in the entrance of the cavity with its head protruded slightly under cover of the leaves. A week later, on March 31, it was still in the same position. On looking closely I found that its eyelids were glued shut by some exudate so that the animal was unable to see. However, it was alert as it retracted the head quickly when I rustled the leaves near it. On April 7 it had gone. From the condition of the opening I judged that it had left three or four days previous. The length of time that this turtle lay quiescent after moving to the surface was remarkable. Warm rains that occurred after March 31 may have induced further activity.

On March 31 a second box turtle that had emerged from winter quarters was found in another spot on this same property. The shell of this animal was encrusted with mud on the sides and top and dried earth clung to the head and legs. A foot away was the spot where it had spent the winter, a slight excavation in a heavy clay soil, under shelter of a growth of weeds. The opening in the ground was merely large enough to contain the turtle. On the bottom was a distinct imprint of the plastron. Apparently the center of the carapace must have been bare

of earth, though leaves had blown in over it and had matted down to form a suitable covering. Two feet away was a second cavity similar to the first that had been occupied by another box turtle. These two sites were on the broad top of a slight knoll in an old weed-grown field ten feet from the border of the woods.

Dr. A. K. Fisher states that during the past fifty years he has found many box turtles in hibernation and that all were resting in shallow excavations with only a slight protection of earth above them. This seems, therefore, to be the normal ordinary manner for them to spend the winter. They rely apparently upon the drifting of fallen leaves and the breaking down of surrounding herbage to aid in giving them sufficient cover.

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NOTES ON AMPHIUMA AND NECTURUS

The northern water dog (*Necturus maculosus*) is not a common animal here at Raleigh and never attains the size of northern specimens. From 1894 to the present time I have records of twenty-one specimens, though others, not recorded, have also been taken. Of these, one was taken in February, nine in March, eight in April, two in May and one in November. So far as I know, all were caught on hook and line in Neuse River, and of the seven of which measurements were preserved, the smallest was 144 and the largest 186 mm. in length. None approached *N. punctatus* in any way except in the small size, the markings being those of *maculosus* as well as the structural characters.

The ditch eel (*Amphiura means*) appears to be abundant in the wet swampy meadows along Walnut Creek, and in all other suitable situations, but is seldom found except by men engaged in digging or in cleaning out old ditches in such places. One man